Chap. 13 : the development of japanese-style management (part ii. case-studies)

著者	林 武
権利	Copyrights United Nations University
journal or publication title	The Japanese Experience in Technology: From Transfer to Self-Reliance
page range	168-179
year	1990
URL	http://hdl.handle.net/2344/00050962

13

The Development of Japanese-style Management

The Japanese Approach

For some time now, the characteristics of Japanese-style management have been a popular topic, mainly in Europe and in the United States. Such topics as the business group, the seniority wage system, the lifetime employment system, the periodic recruitment of new graduates, and the *ringi* system have been examined in diverse ways. But a look at the actual operations of enterprises in Europe and the United States indicates that, though there are differences due to managerial climate and environment, there are many similarities of principle between the Japanese and Western approaches. There is even the opinion that it is inappropriate to conclude that Japanese management practices are special or that they are not universal. Emphasis in recent analysis has been on how the Japanese management style has arisen and evolved historically, rather than on its typological characteristics.

Economic Nationalism

The problem of Japanese management methods, in contrast to those in Europe and the United States, and the formation and development of a government-led national economy have become an issue of concern, especially when examined in the context of the situation in developing countries. And yet, Japanese bureaucrats complain about their lack of power. A Japanese economic bureaucrat lamented, after making a visit to the Republic of Korea, that what Korea is doing would be impossible in Japan.

If the government's policies encourage development and if industry and management respond co-operatively, the relation is said to be good. The comment on Korea, however, implies that it is now not good. Indeed, one sector of Japanese bureaucracy disparagingly compares the present business world to the military of the past.

Since the Meiji period, Japan's development as a nation-state has been supported largely by government enterprises. Private enterprise has wielded little power, and an atmosphere of predominance of state power over the private world has prevailed.

The bureaucracy has been criticized as lacking flexibility; it has no objective standard for evaluation, and tends toward expansion. Although it professes a concern for public welfare and proclaims its neutrality, it cannot escape a conservatism rooted in legalism and bureaucratism. It is difficult to expect bureaucrats to respond quickly to changing situations. Criticism from the business world triggers such comments from the bureaucracy as the one on Korea. In other words, the physiology of the bureaucratic system does not respond well to economic logic. Unlike in the United States and elsewhere, Japan has no tradition of representatives from specific industrial fields entering the administration to take charge of policies. In Japan, the bureaucracy is made up of professional bureaucrats.

Nevertheless, foreigners opine, Japan is something best represented by the label "Japan Incorporated."

Although the make-up and logic of government and business are basically different, the two once enjoyed good relations in Japan. But these relations have been lost, and the government's leadership has been failing.

In the Meiji period, the government adopted preferential measures to assist the Mitsubishi Company in opening up coastal navigation. Mitsubishi actively co-operated in order to bring about realization of the government's (Okubo cabinet's) policy of guiding and encouraging small enterprises to devote themselves to industry.

The government undertook to sell certain state enterprises to the private sector, and companies that qualified followed Mitsubishi's example. These companies had managerial ability and were ready and willing to co-operate in the national programme.

The consensus among politicians and entrepreneurs in this period was to curtail imports and promote exports. Thus, in terms of policy, the national interest did not conflict with the interests of private business. One attraction for the private sector was that the government had collected technology and information on the international environment and economy in an era when information was scarce and valuable.

The Impotence of the Political Parties

If the shareholders of Japan Inc. were the Japanese people and the party politicians were the agents attending the general meeting of the corporation on behalf of the people, the functions to ensure long-term dividends would be performed by the politicians and their parties. However, both before and since World War II, the Diet has not attracted the intellectual élite, and the political parties and politicians have been incompetent in planning policies.

Consequently, the bureaucracy at the central government offices has been engaged in policy planning on behalf of the politicians. This has created the inclination and possibility for high-level bureaucrats to become members of the Diet. Once the major economic and labour organizations (e.g., Keidanren, Nikkeiren, Sohyo, etc.) were able to collect information, the economic bureaucracy started performing the functions of long-term forecasting, planning, and co-ordinating.

Nevertheless, the central government bureaucracy has been able to wield important influence only twice during its recent history: once in the mid-Meiji period and again after the Second World War, when the bureaucracy was relied upon to carry out the administrative tasks relating to Allied policy.

The partnership of government and business has two aspects, one fixed (the independent, divergent tendencies of each), the other (their common interests) changing as time passes, and insofar as the protection of national interests is concerned, the two have been compatible. However, when excessive national interest drove the entire country to a wartime economy, a group of bureaucrats who thought of themselves as "new bureaucrats" sided with the military. This was a time when enterprises, while protected, faced extreme limitations of activity under the controlled economy. At about this same time, the *zaibatsu* were beginning to be forced to loosen their firm economic grip.

The formation of a wartime economic system began in 1931. In connection with its construction, the *zaibatsu* came under fire. There were radicals in the military who were highly critical of the monopoly of wealth and economic control by the *zaibatsu*; the younger officers, in particular, felt that, to increase revenue, taxation of the high-income class must be undertaken. As a result, moreover, dividends income earned by *zaibatsu* families was targeted for high taxes.

On another front, as a result of the government's policy of promoting the heavy and chemical industries to strengthen the military, the *zaibatsu* concerns had to make immense new investments to maintain their positions in the economy. Under the growing demand for funds, *zaibatsu* families and *zaibatsu* holding companies were compelled, for the first time, to make shares available to outside, but related, companies to raise funds. Thus, the investment monopoly in *zaibatsu* holding companies held by *zaibatsu* families was broken (Yasuoka 1981).

Although the *zaibatsu* were dissolved by order of the Occupation forces as part of the democratization of the economy after World War II (1947), a decade later, they had begun to reform, but now no longer under the control of the old *zaibatsu* families. The age of capitalism without capitalists had arrived.

The Transformation of the *Zaibatsu*

In response to a questioner who asked about the basic difference between the *zaikai* (financial circles) of the pre- and post-war periods, Sato Kiichi (1894–1974, former president and chairman of the board of directors of Mitsui Bank, the nucleus of the Mitsui *zaibatsu*) answered with: "Have the *zaikai* existed since the war? The answer is, No."

What he meant was that the true *zaikai* were a pre-war phenomenon, when closed-door discussions between the gigantic Mitsui and Mitsubishi would find reflection in policy for the whole economic world. Each *zaibatsu* had important political connections. For example, for Mitsui there was the Seiyukai party, and for Mitsubishi the Minseito.

The rankings among the *zaibatsu* were clearly reflected in the choice for the position of chairman of the board of directors of the Industry Club of Japan, one of the *zaikai*'s most important bodies (Sakaguchi 1976).

The establishment of this club, in 1917, symbolized the firm position the manufacturing sector, including mining, had attained in the Japanese economy. Before that, the economic world had been dominated by bankers and the Tokyo Chamber of Commerce.[57] The first chairman of the Industry Club of Japan was Dan Takuma (1858–1932), of Mitsui. Dan was an engineer and a leader in the modernization of the Mitsui coal-mines; he later became chairman of Mitsui and Co. As representative of the *zaibatsu*, he occupied the highest position in the club for 15 years, until his assassination by a rightist. Kimura Kusuyata (1865–1935), of Mistubishi, succeeded him.

Before World War II, the *zaikai* formed a society closed to non-*zaibatsu* enterprises.[58] Miyajima Seijiro (1897–1963), president and later chairman of the board of directors of Nisshin Spinning Co., was one of the few outsiders who unflinchingly protested against the *zaibatsu*'s despotism.

Since his university days, Miyajima had been a good friend of Yoshida Shigeru, Japan's first prime minister after World War II. Upon Miyajima's recommendation, Yoshida appointed Ikeda Hayato to the position of minister of finance. Ikeda later became the prime minister and the creator of the income-doubling policy that contributed to the Japanese economy's rapid growth.

Shimomura Haruo (Ministry of Finance) and Okita Saburo (Economic Planning Agency) were among the outstanding figures in the economic planning bureaucracy under the Ikeda administration. Their accomplishments parallel the many splendid contributions made by the so-called professors group of Arisawa Hiromi, Tsuru Shigeto, Nakayama Ichiro, and Tohata Seiichi in the years of the priority production system after World War II.

The four most influential organizations in the *zaikai* since the war are: the Federation of Economic Organizations (Keidanren), the Japan Chamber of Commerce and Industry (Nissho), the Japan Federation of Employers' Associations (Nikkeiren), and the Japan Committee for Economic Development (Doyukai). There were no traces of *zaibatsu* domination and exclusivity in these groups, and, in fact, the leaders in the reconstruction of the Japanese economy after World War II came from non-*zaibatsu* enterprises. As a result of the dissolution of the *zaibatsu* and the banishment of war criminals from public office, "only the younger generation of top-level enterprises and the leaders of second-ranking enterprises remained in the business world, and they renewed the management class" (Hara 1977).

When the low living standard and a desire for greater freedom intensified labour discontent in the period of post-war confusion, old-style managers did not know how to respond. A general strike on an unprecedented scale was planned for 1 February 1947. The labour leaders regarded the Occupation forces as the "liberation forces," but when these forces banned the general strike, a chill was cast over the labour movement and its expectation of easy liberation.

Immediately after the general strike plan failed, the Japan Federation of Employers' Associations was established. To prevent a revolution, the new business leadership—the "fighting Nikkeiren"—resisted the labour offensives, while, in another camp, younger managers affiliated with the Doyukai "groped for the greatest common measure by which to collaborate with labour." This gave rise to the notion that Nikkeiren and Doyukai constituted a sort of two-horse carriage, brought about by business's effort to avoid an economic crisis.

During the recovery and reconstruction of the economy, key industries established their operational bases, and newly formed business groups engaged more and more in big projects. When the Japanese economy entered its rapid growth period, Keidanren began advocating an equal relationship with the United States, Japan having extricated itself from its dependence on this Western power. The age of "big business" had come to Japan. The year was 1964.

Japanese-style Management Today

During a discussion in 1969 between Shishido Toshio, then chairman of Nikko Research Center, and Mimura Yohei, former president of Mitsubishi Corporation, when Mimura was asked whether a Japanese-style general trading company was possible in the United States, he said: "Because management in the United States tends too much toward the short term," it would not be possible.[59] Planning in Japanese companies often requires a long time from conception to implementation, so that a company of this kind may not conform to the interests of shareholders who expect high dividends quickly.

Shishido remarked, considering the essential nature of capitalism, that "the capitalist selects the manager, and unless he increases profits quickly, he will be fired. In Japan, however, capitalism has no capitalists. Nobody imagines the president of Mitsubishi Corporation has been selected by its shareholders. Many companies speak of their social responsibilities, but not of the responsibilities to their shareholders. Personally, I don't think this is a good thing; on the other hand, one could say precisely because this is the way it is in Japan, Japanese companies have achieved prosperity and increases in productivity" (Shishido 1970: 194–95).

Another insight into the Japanese style of management is provided by an incident involving an employee of a commercial firm who, suspected of graft, committed suicide and left a note saying the company was "immortal."

A company president indifferent to shareholders and a sacrifice of one's life for the benefit and prestige of one's employer seem especially indicative of a particular Japanese management culture.

In Japan, the number of shares held by individual stockholders is extremely small, and for each listed company, an average of 10 institutional shareholders, mainly banking institutions, hold the overwhelming majority of its stocks. It is common for companies to hold each other's stocks. For this reason, Japanese capitalism is often referred to as "trust capitalism" or "no-capitalist" management capitalism.

A strong sense of belonging, what might be called enterprise familism, and an intense loyalty within an organization that operates according to quasi-family principles and practices could account for the case of the employee who committed suicide. And he was ashamed of himself for having been suspected of a "lack of virtue." He also adhered to the code of bushido, by which he intended, through his suicide, to morally prosecute those who suspected him. Or, it may have been that his sense of responsibility toward the company caused him to want to protect the company's integrity at the cost of his own life. Bushido mandated a manifestation of one's loyalty.

In Japanese culture, a person may not speak ill of the dead, and so if a verification of the facts reveals a dishonour, its disclosure would be embarrassing. Perhaps the person committed suicide simply because he was tired of living. If so, suicide is an allurement toward which anyone living in a highly industrialized society may tend to be tempted, and it is a disease inherent in modern civilization.

Foreigners (especially Westerners) often find it difficult to understand the psychology and logic of Japanese group formation. That there is competition between groups comes as no surprise, but many are not aware that fierce competition often occurs within them. This sort of unawareness can lead to a misinterpretation of Japanese business management. The impression we Japanese have gained, for example, from textbooks and the popular media of management practices in Europe and the United States often does not coincide with the actual situation.

Japanese management is characterized by lifetime employment, a seniority wage system, vague job classifications (which means an unspecified range of responsibilities and power) and groupism. It is generally true that workers select their employers, not their occupations. And this corresponds well with the practice of regular recruitment of new graduates and the training of new employees in the particular business practices within each enterprise. Because the system and individual jobs in one enterprise are incompatible with those of others, there is a tendency created in employees to settle in one company, which justifies the immense educational investment made by the enterprises.

The system of seniority wages was originally based on a great value placed on experience and skills and on the assumption that living expenses would be greater for more senior employees, and it became firmly established and widespread in the period of sharp inflation. The lifetime employment system was established in 1910–1920, when the labour movement was active, to secure and pacify a skilled labour force. In parallel with this, unskilled, outside contract workers and temporary workers were recruited, and skilled workers of the key production sectors were deployed from the parent company to its affiliates. This inevitably led to the formation of a dual employment structure.

As in the past, technological innovation today is changing the Japanese style of management in various ways. The focus of education and training within the company is shifting from the newly recruited to the middle- and higher-level strata of employees to ensure their adaptation to new technology. The seniority wage system has been combined with a system of wages based on job function, which itself is undergoing revisions amid rapidly progressing technological innovations.

Management concepts and practice aim at a continually expanding wealth and growth potential. Technological innovation, however, brings with it fewer job opportunities in the manufacturing sector (because of the mechanization of the production process), and it reduces the office work-force, while it encourages an expansion of the planning, R. & D., and sales divisions. This is referred to as the development of a "software economy." This has been reducing direct employment and diversifying, increasing, and shortening employment periods for indirect employment. For this reason, it is difficult to forecast in which areas the traditional Japanese style of management will continue or will have to change. One certainty is that, although the priority of where one works rather than what one does will not altogether disappear, the giving of priority to occupational preference will grow stronger.

As indirect employment becomes shorter and more irregular, it demands higher wages than direct employment. If necessary, an enterprise will convert indirect employment to direct employment, thus realizing a long-term reduction of wages. This is one aspect of developing software economies, and a possible outcome of this will be the diversification and professionalization of the technical occupations, which in turn will increase social mobility.

History of Japanese-style Management

Yasuoka Shigeaki, an economic historian, isolates the following three areas of industry where the Japanese style of management was first established following the changes brought about by the Meiji Restoration.

1. In areas that held an advantage in the beginning. Products such as silk and tea, in other words, many agricultural products became goods for export. (Coal and copper may be included in this group.)
2. Industries and products that had not been affected by the international economy: foodstuffs such as salt, soya-bean paste, soy sauce, and sake; fuels such as coal and charcoal; materials for housing such as straw floor mats and wood; and native clothing.
3. Areas and their goods that were at a disadvantage in the beginning, for example, cotton and wool, which suffered strong external competition (Yasuoka 1981).

The process was most apparent in this last group, where, in the transition to import substitution and expansion of exports, Japanese-style management became firmly institutionalized.

Yasuoka focuses attention on (1) the role division between investors and management, (2) organizations for engineers, office workers, and plant workers, (3) the employment period, and (4) the wage system. An examination of each item will make clear that there were in existence domestic conditions favourable to converting an internationally disadvantageous position to an advantageous one.

The role division (1) was characteristic of big merchants, where the owners were busy with their social functions and the actual business was performed by clerks, called *banto*. The *banto* had been trained in business skills since childhood and screened from among many employees. Just as investors in an unlimited or family-owned business must bear full responsibility as a business partner, the *banto* bore full responsibility for business activities in the owner's firm.

To maintain or develop their properties and businesses, merchants commonly had their eldest daughters marry *banto*, then let these sons-in-law succeed to the property and enterprise. This was in contrast to the practice of primogeniture in the samurai class.

Only two to three per cent of all employees were able to rise to top management positions at the big merchant houses as the job performance demands were extremely tough. There was no guarantee of long-term employment; only able men were hired for life, and the time of contract renewal was also often an opportunity for discharge. The strictness and severity of the evaluation systems used at the time, as seen in the Mitsui family, for example, were very like those in force today at the large firms (Chimoto 1982).

The rules pertained to every aspect of work and daily life. Only two holidays a year were allowed. Although food and clothing were supplied, wages were extremely low. But with patience and hard work, the apprentices accepted this as the necessary period of schooling in which to master all the needed management skills, starting with working an abacus and bookkeeping, before proceeding to transactions and contracts.

Those who could not tolerate the initial training were regarded as failures. But once completing the initial training, the new managers were allowed to live outside the shops, and were provided with opportunities to establish their own families and even the right to set up their own shops.

The time frame for skill training extended to the time of the physical examination for conscription, at age 20, by which time basic occupational training was expected to have been completed in the merchant and craft worlds. The establishment of the elementary school system, however, meant that, for some vocations, the training—which began upon graduation from elementary school—was interrupted by military service. Having formed part of the social change, the new technology, which was introduced selectively, filled the gap caused by this interruption (Yasuoka 1981).

As an example of the selectivity applied in introducing technology, in the silk-weaving area of Nishijin, in Kyoto, the machines that could not produce as fine a weave as traditional machines were rejected. A mixture of new and old, internal and external technologies was dispersed throughout the production process; or, as dictated by the particular markets and characteristics of certain products, one type selected and applied exclusively (Iwashita 1982). Modern technology and machinery were carefully evaluated from management's viewpoint before being adopted; this selectiveness implies the existence of a large stock of managerial ability.

Japanese-style Management and Managers of *Zaibatsu*

The question arises, how did the stock of management ability among the old leading merchants respond to the rapid political and social change precipitated by the Meiji Restoration.

The transformation from privileged merchants (*seisho*) to *zaibatsu* as an example of this process was characterized by three conditions: (1) management based on familism, (2) family-owned and -operated enterprise, and (3) maintenance of broad, family-operated network of assets and business connections.

Management based on familism had an essential internal logic in response to the establishment of a modern private ownership system by the Meiji government, which, in order to gain credit with foreign countries, had to establish modern civil and commercial codes. Thanks to the *banto* system, for example, the top merchants had their "management specialists," able men in the right places.

On the other hand, the merchant families maintained their familistic structure, for without limitations on the execution of modern private law and private rights that allow the free disposition of properties, the preservation and development of family enterprises could not be ensured. To prevent the dispersion of family properties, these merchant houses instituted a "family constitution," or "family precepts," shunning outside capital investments in their family businesses.

Yet, under these circumstances, raising funds for expansion and diversification in response to social change was difficult, and businesses were compelled to venture into risky areas of high profitability and accumulation. The Mitsui family, aided by its able managers, was successful; the Konoike and some other banking families were not, however, as blessed with able management specialists. They could not adjust to the changing situation and were anxious only to preserve a safe and steady, conservative business management, which led to diminishing capital and finally the loss of their influence in industry.

A family's monopoly of capital investment, that is, closed management, was one type of response merchant families made to the rapid changes, a response they did not consider unusual. It was common for an owner to try managing the family business with his own capital and to prevent others from interfering with his control. Unlike other business groups, both the large *zaibatsu* and the small local *zaibatsu* were fortunate in being able to practise this independence (Seoka 1982; Fujita 1981).

The *zaibatsu* formed in the early 1900s. The relationship between the head of a *zaibatsu*, the employer, and the management specialists was not one based on the practice of modern contracts. It was closer to the relationship normally found between a master and his servants. The confusion or contradictoriness of the *zaibatsu* family members managing their managers arose from the fact that, while the *zaibatsu* families were the sole stockholders and carried full responsibility for their businesses, they left actual operation wholly in the hands of their managers, who had no ownership in the businesses whatever. Some experts (e.g., Noda Nobuo) maintain that if there had been no interference in operations by the families, the *zaibatsu* businesses would have been more active.

Regarding their legal status, the *zaibatsu* families assumed the form of an unlimited partnership, because, as such, it was not necessary to disclose the company's financial status (Mitsubishi was a limited partnership) (Yasuoka 1981). Scholars speculate variously that the *zaibatsu* families adopted this legal form to avoid having their income from property be regarded as unearned income, as a measure against taxation, or to avoid donations. The Japanese *zaibatsu* were not alone in keeping their financial records confidential. All organizations of this kind did. The Rothschilds, for example, did not disclose a balance sheet before World War II.

Zaibatsu Managers and the Reference Group

The *zaibatsu* managers felt a personal loyalty to members of the *zaibatsu* family—not unlike that demonstrated by the company employee who committed suicide. A keen national consciousness, too, however, could be observed in the managers: Enterprising managers were motivated in the early days to contribute to the nation's development through *zaibatsu* family property. If too highly motivated, however, they were considered dangerous to the welfare of the family and consequently isolated.

Because most managers were well-educated ex-samurai or ex-bureaucrats, they were familiar with foreign countries and modern technologies, and had an enlightened, modern outlook. They were thus well qualified to participate in the commercial and industrial activities of the day. Nevertheless, just as Dan Takuma hesitated to be "a clerk for a merchant family" rather than a government bureaucrat, they also had a psychological resistance toward clerking for merchants.

They were interested in social prestige and official approval from the nation and the government for their achievements. They were active in social and cultural projects outside the *zaibatsu* businesses. This was in sharp contrast to the *zaibatsu* families.

They devoted themselves to religion and philosophy (Seoka 1982). This might have been a means for the *zaibatsu* managers to maintain a psychological equilibrium between private and state interests. This desire to maintain a balance between personal and national interests seems to indicate there was some tension in existence from the time of the formation of the *zaibatsu*.

These managers had to concern themselves also with the public image of the *zaibatsu*. Thus, an ultra-right reformer like Kita Ikki (1887–1937) would receive contributions from the *zaibatsu* to maintain a relationship with him and his followers and thus lessen the potential threat Ikki and the reformists posed to the *zaibatsu*.

There were other reference groups, some made up of Christian philosophers and others of state Shintoists. In any case, "the *zaibatsu* were not risk-taking pioneers; rather, they were good at following the pioneers to harvest their results later" (Yasuoka 1981).

Local *Zaibatsu* and New *Zaibatsu*

The local *zaibatsu* and the newly formed *zaibatsu* contrasted with the big *zaibatsu*, which adhered closely to the intentions of the central government and enlarged and diversified their activities on a nation-wide scale.

The local *zaibatsu* amassed vast wealth through diversification of their business activities, but they did not move from their local bases even after they had grown into nation-wide enterprises. In general during this period (early 1900s), the local *zaibatsu* did not adapt themselves to the line of industrialization led by the central government. Because their markets were not of a size that would have required the introduction of modern technology, their diversifications were carried out mainly in the traditional industries. Their chief areas were large-scale wholesaling and retailing, brewing, and food processing. When investments in the (local) railway, coastal transportation, warehousing, and electricity were added, most of the local *zaibatsu* constituted businesses of a size paralleling the agricultural landlords.

While hesitating to invest in modern industry, these *zaibatsu* invested mainly in banking. Accompanying development, money was in constant strong demand, and the banking business, which was stable, did not require as complicated a technology as did other industries.

Once banking was generally recognized as an important institution, holding the key to local industrial development, local notables began entering the top ranks of local banks—not for the sake of financial gain so much as for social prestige and to give the appearance of serving their communities. Thus, there was no evidence of plans to take control of the banking institutions through investment to utilize them as their own financing source.

Most local *zaibatsu* became *rentiers* in the process of the nation-wide structural changes in the economy because they could not recruit capable management personnel, and the limits of their financial capacities precluded them from entering industry. On the other hand, ambitious businessmen operating local mining or silk concerns grew into *zaibatsu* by riding the wave of industrialization and making full use of the technology their families had accumulated.

The top management of these new *zaibatsu* were men educated as engineers, scientists, etc.; they were well aware of the need for new investments and technology. The enterprises they established formed new *zaibatsu* by moving into fields where their technologies were interrelated. Some of these new *zaibatsu* included Nissan (Nihon Sangyo), Nisso (Nihon Soda), Nitchitsu (Nihon Chisso), and Riken (Rikagaku Kenkyusho).

These new *zaibatsu* had strong foundations and could undergo rapid growth. They were more daring than the old *zaibatsu* as they advanced into the heavy and chemical industries, and a characteristic common to all was that their founders were engineers.

Because the technology in these industries ranged over energy, materials, parts supply and processing, and other sectors, the new *zaibatsu*, in the process of expansion, inevitably ran up against enterprises belonging to the old *zaibatsu*, and this naturally restricted their business activities. For this reason, they went in search of opportunities in Japan's colonies overseas, such as Manchuria and Korea, where they played a leading role in the formation of the heavy and chemical industries. For these new *zaibatsu*, the younger government functionaries, the "new bureaucrats," acted as their political mentors, and they, in turn, had the support of the military. The defeat in World War II meant a loss of most of the foundation on which they had been established.

From the viewpoint of the five Ms, however, this loss was not fatal for the reconstruction of the *zaibatsu* as business groups. What was decisive, though, was their inability to raise money or secure credit, which controlled all the five Ms. In other words, it was the group's lack of supporting banks that was fatal. The ex-*zaibatsu* enterprises have revived as new groups organized around the new banks.

Of these new *zaibatsu*, Riken had started out as an institute of physical and chemical research in 1917. It described its purpose thus:

> To promote the development of industry, the institute will be engaged in research in physics and chemistry and in the pure sciences and their applications. In either the agricultural industry or any other industry, an institute that does not base itself on physics and chemistry can make no steady development. Especially in Japan, which has a dense population but insufficient industrial and other materials, there can be no other way to realize the prosperity of the nation than by promoting the development of industry by means of education. Our aim is to accomplish this mission.

An examination of how Riken's goal of national development on the basis of science and technology was realized deserves careful study. It perfectly epitomizes the period of the transition from importation to self-reliance in technology.

In passing, it might be mentioned that the three Nobel laureates Yukawa Hideki, Tomonaga Shin'ichiro, and Fukui Ken'ichi had direct or indirect relations with this institute.[60]